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TRANSPORTATION TEST WITH LEMONS AND ORANGES FROM SOUTHERN CALIFORNIA TO NEW YORK,

September 1950

(In cooperation with the California Fruit Growers Exchange)

By

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Transportation Test with Lemons and Oranges from Southern California to New York, September 20-29, 1950

Object

In 1948 and 1949 four transportation tests with lemons were made from Southern California to New York. The results of these tests were reported in H.T.&S. Office Reports Nos. 195, 214, and 217. All the tests were for the purpose of studying the performance of certain refrigeration services under moderate and extremely warm weather conditions. They included both full-bunker and half-stage refrigeration, and all the test cars were equipped with fans. The question frequently arose later as to whether or not the refrigeration recommendations developed from the results of these tests were equally applicable to non-fan cars.

The United States Department of Agriculture had a large number of records of refrigeration performance of non-fan cars with the older lemon load (348 boxes), but none with the recent standard 464-box load, to which the attention of the above mentioned transportation tests with fan cars had been directed. Previous records of refrigeration performance of non-fan cars showed that temperature differences between top and bottom of the load might be as much as ten to fifteen degrees with oranges, and five to ten degrees with lemons. When half-stage refrigeration was used with this lemon load (348 boxes) the differences between top and bottom were reduced to three to five degrees. However, as stated, no tests had been made on non-fan cars with lemons since the adoption of the solid 464-box load.

The present test therefore was made with the hope of closing this gap in the available information. The test was arranged to take place during the transition shipping season between summer and fall for which some reduction in icing services used in the summer months has been recommended. It is planned to run a similar transportation test during the warmest summer shipping season.

Test cars and loads

The test consisted of ten cars of warehouse-cooled lemons and two cars of non-precooled Valencia oranges. All of the cars were loaded September 20. The loading data and icing services are shown in table 1. The preicing and all subsequent icings were supervised by the test personnel.

The test cars were of two series; non-fan cars and fan-equipped cars. Both series had the same dimensions and insulation and were equipped for half-stage refrigeration. The rated capacities of full and half-stage bunkers were respectively 11,500 and 6,300 pounds of chunk ice. The cars were steel sheathed and carried 3-1/2 inches of insulation in floor and ceilings and 3 inches in sides and end walls.

All lemon loads were of the prevailing size, 464 boxes, two layers high (on end), eight rows wide, and 29 stacks long, having a total weight of about 40,400 pounds. The two orange loads were of 462 boxes, two layers high (on end), 7 rows wide, and 33 stacks, having a total weight of about 39,300 pounds.

The test boxes of comparable light green lemons were placed in the top layer centerline, quarterlength position of the ten lemon test cars.

Temperature records

Temperature records within the cars were obtained by means of electric resistance thermometers at twelve positions in one end of the car--ten in fruit and two in air, as follows:

At bunker, top, middle, and bottom layers (centerline); at quarterlength (7th stack), top and bottom layers (centerline) and in the middle layer, rows 3 and 6; at doorway (13th stack), top and bottom layers (centerline) and in the middle layer adjacent to south door; in the air at doorway (centerline) near ceiling and under the floor rack.

The south door thermometer location was intended to furnish data on near maximum fruit temperature and the air locations were intended to simulate "liquidometers".

Outside air temperatures were obtained by two Ryan recording thermometers one attached underneath a test car, the other above the observation platform of the business car.

Route and running time

The test was routed via the Santa Fe, Belt Railway Company of Chicago, and Erie railroads to Jersey City. The total elapsed time to Jersey City from San Bernardino was 181 hours. Of this 100 hours (55.2%) were running time and 81 hours (44.8%) standing.

Weather conditions

The outside temperature conditions encountered were generally somewhat cooler than anticipated for the autumn transition shipping period. A typical average outside temperature at this time of year might be considered as between 65° and 68°F., whereas the average temperature was 61.3° for the entire trip. The first five days, however, averaged 66.0° and the last three and one-half days' average was 57.3°.

The cars arrived in Jersey City the morning of Sept. 29 and were unloaded Oct. 1 to 3, during which period the average outside temperatures in the Erie railroad yard was 66.3°.

Condition of test fruit and commercial loads at destination

The test boxes from the ten lemon cars were inspected on the various nights the cars were unloaded. Although these test boxes could not be observed simultaneously, the records show that the test fruit from all cars was very similar and there was no evidence of differences due to the different types of refrigeration used. The description of each test lot of lemons was, "fruit firm; mostly good color to a few reddish; green buttons; sound".

The test boxes from the two orange loads also were found to be quite similar, being mostly firm and fresh appearing; buttons mostly green; sound.

The commercial loads were reported sound, with the exception of cars C and F. Decay in car C ranged from sound to four percent, with a reported average of two percent. The average temperature of the fruit in this car for the transit period was 47.0°F. The range of fruit temperatures after the first 24 hours in transit was 36 to 55°. Decay in the commercial load of car F was reported as one to two percent. Average transit temperature of the fruit in this car was 48.5°.

Effect of refrigeration service on temperatures in transit

Icing services selected for the test were intended to include those most likely to be needed for the autumn transition shipping period. (See tables 1 and 2, and for refrigeration performance see tables 3 to 15 and figures 1 to 12).

The two most complete services of the test were for the non-fan cars L and E (see figures 10 and 5), both preiced and replenished by carrier; the former half-stage refrigeration with two reicings in transit and the latter full-bunker refrigeration with one reicing. These services are usually regarded as equally effective. Transportation tests of the past two years had shown that in fan cars the full bunker with one reicing in transit produces somewhat lower temperatures in the load than half-stage with two reicings. However, from much earlier experience with non-fan cars it was anticipated that half-stage with two reicings in transit would produce somewhat lower load temperatures than full bunker with one reicing, and it did. The difference apparent in the top layer only was of little importance as both services were entirely adequate. Another point in favor of the stage-iced car was the smaller spread in temperature between top and bottom layers of the load. The average differences between top and bottom were 7.2 degrees and 10.8 degrees in the half-stage and full-bunker cars, respectively. Such inequalities of temperature are, of course, a well recognized fault of the non-fan car in general. It is interesting, however, that under comparable circumstances half-stage refrigeration will reduce the temperature spread between top and bottom by about 30 percent through its promotion of increased air circulation in the car.

The least complete service was that of car F (see Fig. 6), preiced and replenished, half-stage, and no reicing in transit. It was not a service to be recommended for a New York shipment of lemons at this season of the year, but in the present instance with the cool outside temperatures encountered during the test the service was adequate. At no time did any recorded load temperature in transit exceed that of a good lemon warehouse. The average load temperature was 48.5°. Car A (Fig. 1), which received full-bunker icing and otherwise the same service as car F, showed an average transit load temperature of 45.5°. The top load temperature, however, differed little in the two cars, the lower average temperature of car A being largely due to the lower bottom layer temperature.

In previous reports attention has been drawn to the advantage of a delayed reicing of lemons in transit. This advantage was experienced in fan cars and the same situation seems to hold for non-fan cars. For example, cars H and G were the same except that the former was reiced at Needles only eighteen hours after replenishment at San Bernardino and the latter was not reiced until Waynoka, about seventy hours out of San Bernardino. The later icing produced not only a lower load temperature but also a more uniform one.

The early-iced car could take but 1750 pounds of ice, as compared with 3900 pounds for the later iced car.

Car A (Fig. 1) and car I (Fig. 9) offer a comparison of fan and non-fan cars receiving the same icing service (preiced, replenished, DNR). Car A, the non-fan car, although cooler when loaded by 5.5 degrees, showed an average transit temperature 3.0 degrees warmer than that of Car I. Also, in car A the temperature spread between top and bottom layers was 9.8 degrees as compared with 0.3 degrees in car I. The pairs of cars; B and C, and J and K (Fig. 2, 3, 11, 12) offer further comparisons of performance of fan and non-fan cars. These four cars were all loaded dry, initially iced, with one reicing in transit. The former pair carried lemon loads under half-stage refrigeration and the latter pair oranges under full-bunker icing. Both services proved adequate for the respective commodities. However, car J, the non-fan car of oranges, allowed a 13.0 degree spread between top and bottom layers. It is rather interesting that in comparing cars B and J, both non-fan cars but one half-stage reiced lemons and the other full-bunker reiced oranges, it is found that the average transit temperatures of the top and bottom layers and of the entire load were practically the same in the two cars. The oranges when loaded were ten degrees warmer than the lemons, a fact which accounts for the 5,000 additional pounds of ice melted in the orange car. An almost identical situation in refrigeration performance is disclosed when the two fan cars C and K are compared.

As an aid toward a general comparison of the performance of test cars, a list of the cars with services and average fruit temperatures arranged in the increasing order of the transit temperatures attained is presented in table 3.

In the opening paragraph of this report it was stated that recommendations for the refrigeration of lemons in transit have been based upon the performance of fan cars only, and that the question had arisen as to whether or not these recommendations would need modification for non-fan cars in which considerable inequality of temperature between the top and bottom of the load occur. However, no data on the non-fan cars were available for an accurate evaluation of these temperature differences in the prevailing lemon load in relation to the icing services in question.

The present data with special reference to top layer temperatures in the non-fan cars seems to indicate that no modification of refrigeration recommendations for lemons in transit need be made solely because it is a non-fan car. The average top layer transit temperatures were found to range from about 6.5 to 11 degrees warmer than the bottom layer. The maximum temperature spreads ranged from about 8 to 14 degrees. Top layer temperature may sometimes cause some concern, but it should be understood that a small modification of icing service, such as a shift from half-stage to full bunker icing or ordering another reicing in transit, is not likely to remedy the situation, because a change of this sort commonly lowers the bottom temperature without effectively altering that of the top layer where it is needed. Any modification of refrigeration service relative to non-fan cars should be based on its general condition, bunker capacity, insulation et cetera.

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Corona Foothill Lemon Company, Corona, Calif.
Glendora Lemon Growers Association, Glendora, Calif.
La Verne Lemon Association, La Verne, Calif.
Placentia Mutual Orange Association, Placentia, Calif.
San Dimas Lemon Association, San Dimas, Calif.
Sierra Madre-Lamanda Citrus Association, Pasadena, Calif.
Upland Lemon Growers Association, Upland, Calif.
Mr. R. C. Neill, Traffic Department, California Fruit Growers Exchange; Mr. C. A. Mulvihill, Santa Fe Refrigerator Department.

The Santa Fe, the Belt Railroad Company of Chicago, and the Erie railroads over which the test travelled, and the Santa Fe and Erie for providing business cars for the test party.

Besides the members of the test party the following assisted in overseeing the loading of the test cars: Frank Walker and Carl Waldapfel of the California Fruit Growers Exchange; G. L. Rygg, Harlan R. Barber, and J. R. Clements of the United States Department of Agriculture

Mr. James A. Scanlon, Inspector for the California Fruit Growers Exchange and the staff of the U. S. Department of Agriculture Market Pathology Laboratory in New York, who assisted in unloading the test cars and inspecting the test fruit.

Members of the test party were:

E. M. Harvey, U. S. Department of Agriculture
E. P. Atrops, " " " " "
D. H. Dewey, " " " " "
W. F. Kearns, Santa Fe Refrigerator Department, from San Bernardino to Chicago

TABLE NO. 1

LOADING DATA

	A RD 36542	B RD 36565	C RD 14322	D RD 15197	E RD 36556	F RD 36640	G RD 36597
Shipper	Upland Lemon Grs. Assn.	College Hgts Lemon Assn.	La Verne Lemon Assn.	San Dimas Lemon Assn.	San Dimas Lemon Assn.	Glendora Lemon Grs. Assn.	Sierre Madre-Lamanda Citrus Assn.
Icing 1/ Service	Full Bunker Rule 239 (PI by C Repl. DNR)	Half Stage Rule 249 & 255. (Dry car II by C RI Belen)	Half Stage Rule 249 & 255 (Dry car II by C. RI Belen)	Half Stage Rule 239 & 255 (PI by C Repl. RI Waynoka)	Full Bunker Rule 239 (PI by C. Repl. RI Belen)	Half Stage Rule 239 & 255 (PI by C. Repl. DNR)	Half Stage Rule 239 & 255 (PI by C Repl. RI Waynoka)
Fan position	No fans	No fans	Fans on	Fans on	No fans	No fans	No fans
Loading period 9/20	9 a.m.- 3:40 pm	8:15 a.m.- 3:45 p.m.	9 a.m.- 10:15 a.m.	8 a.m.- 6:10 p.m.	8 a.m.- 5:30 p.m.	7:45 a,m.- 1:45 p.m.	9 a.m.- 2:30 p.m.

1/ Key: PI by C = Preiced by carrier
II by C = Initially iced by carrier
RI = Reiced in transit
PC by C = Precooled by carrier
Repl = Bunkers replenished at first regular icing station.

TABLE NO. 1 (Cont'd)

LOADING DATA

	H RD 36601	I RD 14361	J RD 36599	K RD 14482	L RD 36608
Shipper	Sierra Madre Lamanda Cit. Assn.	Placentia Mutual Orange Assn.	Placentia Mutual Orange Assn.	Placentia Mutual Orange Assn.	Corona Foothill Company
Icing 1/ Service	Half Stage Rule 239 & 255 (PI by C. Repl. RI Needles)	Full Bunker Rule 239 (PI by C. Repl DNR)	Full Bunker Rule 249 (Dry car II by C. RI Belen)	Full Bunker Rule 249 (Dry car II by C. RI Belen)	Half Stage Rule 239 & 255 (PI by C. Repl. RI Belen and Marion)
Fan position	No fans	Fans on	No fan	Fans on	No fans
Loading period 9/20	7:20 a.m.- 5 p.m.	7 a.m.- 10 a.m.	10 a.m.- 12:30 p.m.	7:30 a.m.- 10 a.m.	7:45 a.m.- 12 M

1/ Key: PI by C = Preiced by carrier
II by C = Initially iced by carrier
RI = Reiced in transit
PC by C = Precooled by carrier
Repl = Bunkers replenished at first regular icing station

TABLE 2

ICING RECORD

			Date	A Full Bunker Non-fan Pounds	B Half Stage Non-fan Pounds	C Half Stage Fans on Pounds	D Half Stage Fans on Pounds	E Full Bunker Non-fan Pounds	F Half Stage Non-fan Pounds	G Half Stage Non-fan Pounds	H Half Stage Non-fan Pounds
Preiced	San Bernardino	6 am	19	11,880			6500	11,800	6650	6350	6300
Replenished	" "	10 am	21	2,700			3000	3,300	3000	3750	3450
Initial Icing	" "	10 am	21		6300	6250					
Reiced	Needles	5 am	22								1750
	Belen	10:30 am	23		3720	4100		3650			
	Waynoka	10:30 am	24				5100			3900	
Total Ice supplied to Jersey City				14,580	10,020	10,350	14,600	18,750	9650	14,000	11,500
Ice remaining arrival Jersey City (Est.)				1,440	500	0	250	4,320	0	1,500	150
Ice melted to Jersey City				13,140	9,520	10,350	14,350	14,430	9650	12,500	11,350
Ice supplied at Jersey City						2,000			2000		

NOTE: Chunk ice was used for all icings of all test cars.

TABLE 2 (Cont'd)

ICING RECORD

			Date	I Full Bunker Fans on Pounds	J Full Bunker No fans Pounds	K Full Bunker Fans on Pounds	L Half Stage No fans Pounds
Preiced	San Bernardino	6 am	19	11,800			6200
Replen-ished	" "	10 am	21	2,850			3300
Initial Icing	" "	10 am	21		11,900	11,700	
Reiced	Belen	10:30 am	23		6,300	5,200	4100
	Marion	9:30 pm	27				4500
Total Ice supplied to Jersey City				14,650	18,200	16,900	18,100
Ice remaining arrival Jersey City				350	3840	1,600	3,670
Ice melted to Jersey City				14,300	14,360	15,300	14,430
Ice supplied at Jersey City				--	--	--	--

NOTE: Chunk ice was used for all icings of all test cars.

TABLE 3

List of Test Cars with Icing Services And Average Fruit Temperatures, Arranged in the Order of the Transit Temperature Attained.

Car No.	Icing Service	FRUIT TEMPERATURE At Loading. °F	Average Transit Top °F.	Average Transit Bot °F.	Total Avg.** °F.
I	Fans on. FB - PI-Repl-DNR	59.5	42.5	42.8	**42.5
L	Non-fan car. HS - PI-Repl-Two RI, Belen and Marion	54.5	48.0	40.8	44.5
D	Fans on. HS - PI-Repl-One RI, Waynoka	58.0	44.8	45.1	45.0
A	Non-fan car. FB - PI-Repl-DNR	54.0	50.2	40.4	45.5
G	Non-fan car. HS - PI-Repl- One RI, Waynoka (Late icing)	56.0	49.5	42.0	46.0
E	Non-fan car. FB - PI-Repl-One RI, Belen	58.5	51.4	40.6	46.0
C	Fans on. HS - II-One RI, Belen	61.0	46.8	47.6	47.0
K*	Fans on. FB - II-One RI, Belen	72.0	46.5	48.0	47.5
H	Non-fan car. HS - PI-Repl-One RI, Needles (Early icing)	60.0	51.8	43.5	47.5
F	Non-fan car. HS - PI-Repl-DNR	56.0	52.0	45.3	48.5
B	Non-fan car. HS - II-One RI, Belen	63.5	53.7	44.5	49.0
J*	Non-fan car. FB - II-One RI, at Belen	73.0	56.0	43.0	49.5

* Oranges

** Figure shown at nearest half-degree.

TABLE 4 - Car A

Lemons

TEMPERATURES IN TRANSIT

Preiced. Replenished. Do not reice. Non-fan car. Full Bunker.

Place	Date Sept	Time	Out-side	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	Top AIR	Bot AIR	AVE TOP	AVE BOT
San Bernardino	19	6 A	--	Preiced San Bernardino													
Upland	20	3 P	95°	582	563	579	551	584	548	402	579	539	568	705	421	575	507
San Bernardino	21	9:15A	78	552	555	555	527	530	520	370	485	480	540	445	410	554	445
				Replenished, San Bernardino 10-11 A													
Barstow		8:30 P	75	537	545	540	512	505	505	369	---	460	535	555	410	541	410
Needles	22	4 A	63	527	540	530	512	510	500	365	---	455	530	535	410	532	410
Seligman, Ariz.		3 P	81	520	530	525	515	500	485	365	430	445	530	550	415	525	413
Winslow		10 P	56	515	525	520	510	475	480	360	425	445	535	540	415	520	410
Belen, N.M.	23	10 A	65	500	515	510	470	460	470	345	420	435	520	505	395	508	400
Clovis		9 P	61	495	510	500	460	455	465	360	---	430	520	535	410	502	395
Waynoka, Okla.	24	10 A	74	485	505	495	400	445	460	360	---	425	510	510	400	493	393
Emporia, Kas.		7:30P	60	500	505	490	465	440	460	370	410	425	515	545	410	498	402
Argentine	25	5 A	43	480	500	480	465	435	455	360	435	420	505	485	400	487	405
Shopton, Iowa		8:30P	54	485	495	480	480	430	450	360	420	420	500	525	405	487	400
Corwith, Ill.	26	8 A	56	480	485	475	475	425	445	360	405	420	485	480	405	480	395
"		5 P	70	475	485	470	475	425	445	365	405	415	490	430	390	477	395
Hammond, Ind.	27	10:30A	68	485	490	470	475	425	450	370	---	415	490	510	410	482	393
Marion, Ohio		9:30P	59	480	495	475	475	425	450	380	---	420	500	530	440	483	400
Salamanca, N.Y.	28	10:30A	67	495	495	475	465	430	450	380	420	420	495	515	420	488	407
Susquehanna, Pa.		9 P	50	505	500	475	465	430	450	385	---	425	500	525	420	492	405
Jersey City, N.J.	29	2 P	68	500	490	470	475	430	450	375	---	425	490	520	405	487	400
" "	30	12 M	73	515	510	480	475	435	455	385	---	430	490	540	425	502	407
" " Oct.	1	11 A	81	525	520	490	490	440	460	395	---	430	500	585	465	512	412
" "	2	11 A	79	550	550	520	505	450	475	415	---	445	520	575	510	540	430

Note: TB=top bunker BB=bottom bunker CL=centerline
TQ=top quarter BQ=bottom quarter R3=row 3
TD=top doorway BD=bottom doorway R6=row 6
MB=middle bunker MD=middle doorway SS=southside
MQ=middle quarter

TABLE 5 -- Car B

Lemons

TEMPERATURES IN TRANSIT

Half-stage. Dry car loaded. Initially iced. Reiced once, at Belen. Non-fan car.

Place	Date Sept	Time	Out-side	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	TOP AIR	BOT AIR	AVE TOP	AVE BOT
Claremont, Calif.	20	3:30P	93°	645	691	692	599	660	607	581	578	608	637	872	661	676	589
San Bernardino	21	9:15A	78	653	653	661	619	708	618	594	593	597	632	712	621	656	595
				Initially iced, 10-11 A, San Bernardino													
Barstow	21	8:30P	75	630	600	635	590	635	550	500	520	545	610	625	465	622	522
Needles	22	4 A	63	610	580	615	570	615	535	470	485	515	585	595	440	602	490
Seligman, Ariz.		3 P	81	590	570	600	550	595	520	455	465	495	575	600	440	587	472
Winslow		10 P	56	575	560	590	555	580	510	410	460	485	570	575	435	573	452
Belen, N.M.	23	10 A	65	560	550	575	525	570	500	430	445	475	545	550	415	562	450
				Reiced at Belen 10-11A													
Clovis		9 P	61	545	540	565	510	555	490	420	440	455	540	565	415	550	438
Waynoka, Okla	24	10 A	74	530	525	550	495	540	470	405	425	445	525	535	405	535	425
Emporia, Kas		7:30P	60	520	520	545	490	540	470	410	425	445	525	555	425	528	427
Argentine	25	5 A	43	505	505	535	480	520	460	400	415	435	500	505	395	515	417
Shopton, Iowa		8:30P	54	500	500	525	470	510	455	400	415	430	500	425	405	508	415
Corwith, Ill	26	8 A	56	490	490	515	460	500	445	395	410	425	485	495	395	498	410
"		5 P	70	490	490	515	460	500	450	400	410	420	485	530	405	498	410
Hammond, Ind	27	10:30A	68	480	480	505	460	495	450	400	410	425	480	510	415	488	412
Marion, Ohio		9:30P	59	480	480	500	460	495	450	405	420	430	495	525	425	487	418
Salamanca, NY	28	10:30A	67	480	475	500	455	495	450	400	420	430	490	500	415	485	417
Susquehanna, Pa.		9 P	50	480	475	495	460	495	450	405	430	435	490	520	425	483	423
Jersey City, NJ	29	2 P	68	480	475	495	460	490	450	405	425	435	475	515	415	483	422
" "	30	12 M	73	495	495	500	470	500	465	435	435	445	495	545	445	497	438
New York, NY	Oct. 1	12:30P	81	520	530	535	485	535	490	450	450	455	515	600	475	528	452

TABLE 6 - Car C

Lemons

TEMPERATURES IN TRANSIT

Half-stage. Dry car loaded. Initially iced, Reiced once at Belen. Fans on.

Place	Date Sept	Time	Out-side	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	TOP AIR	BOT AIR	AVE TOP	AVE BOT
La Verne, Calif.	20	9:15A	81°	610	615	616	610	592	599	595	604	597	609	695	626	614	599
San Bernardino	21	9:15A	78	665	655	657	620	625	625	610	625	612	649	710	632	659	616
				Initially iced San Bernardino, 10-11A													
Barstow		8:30P	75	595	595	610	605	575	580	575	585	590	620	535	575	600	587
Needles	22	4 A	63	545	545	555	560	540	540	560	555	570	580	500	545	548	562
Seligman, Ariz		3 P	81	515	515	530	550	525	525	545	535	550	565	505	540	520	543
Winslow		10 P	56	500	500	510	535	515	510	535	520	540	555	480	525	503	532
Belen, NM	23	10 A	65	480	480	485	505	495	490	515	495	515	520	450	495	482	508
				Reiced at Belen 10:30 a.m.													
Clovis		9 P	61	440	445	450	475	460	455	495	460	490	495	425	470	445	482
Waynoka, Okla	24	10 A	74	420	420	425	455	435	425	465	440	460	465	415	445	422	455
Emporia		7:30P	60	415	415	420	440	425	420	450	425	445	460	420	440	417	440
Argentine, Kas.	25	5 A	43	415	415	420	435	425	415	435	430	440	455	420	420	417	435
Shopton, Iowa		8:30P	54	410	415	415	425	420	415	420	420	430	440	415	430	413	423
Corwith, Ill.	26	8 A	56	400	405	405	420	415	405	415	415	420	430	395	415	403	417
"		5 P	70	405	410	410	420	415	415	410	420	420	445	470	420	408	417
Hammond, Ind.	27	10:30A	68	415	415	420	420	420	415	400	420	425	460	445	435	417	415
Marion, Ohio		9:30P	59	425	430	430	425	425	425	415	425	425	450	445	440	428	422
Salamanca, NY	28	10:30A	67	430	430	435	430	430	430	420	430	430	445	445	440	432	427
Susquehanna, Pa.		9 P	50	445	445	450	440	440	445	430	440	440	455	470	455	447	437
Jersey City, NJ	29	2 P	68	455	455	460	450	450	450	445	445	445	465	505	460	457	445
" "	30	12 M	73	460	460	465	450	450	450	425	445	450	475	410	430	462	440
" "	Oct. 1	11 A	81	470	470	470	455	455	455	415	450	450	495	530	450	470	438
" "	2	11A	79	495	485	490	460	460	460	425	455	455	515	545	475	490	445

TABLE 7 - Car D

Lemons

TEMPERATURES IN TRANSIT

Half-stage. Preiced . Replenished, Reiced once, at Waynoka. Fans on.

Place	Date Sept	Time	Out-side	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	TOP AIR	BOT AIR	AVE TOP	AVE BOT
San Bernardino	19	6 A		Preiced by carrier 6-10 A													
San Dimas	20	5 P	85°	595	591	635	565	582	585	530	575	564	615	782	454	607	556
San Bernardino	21	9 A	78	580	586	605	550	572	570	495	535	529	575	587	454	590	520
				Replenished 10-11 A													
Barstow		8:30 P	75	530	550	565	535	550	555	515	525	520	560	505	515	548	520
Needles	22	4 A	63	495	510	520	520	520	520	480	515	515	535	475	505	508	503
Seligman, Ariz.		3 P	81	475	490	500	505	505	500	485	500	505	520	485	505	488	497
Winslow		10 P	56	465	475	485	490	495	485	475	495	495	510	455	500	475	488
Belen, NM	23	10 A	65	440	450	455	470	470	460	475	475	475	475	425	475	448	475
Clovis		9 P	61	No reading recorded													
Waynoka, Okla.	24	10 A	74	445	455	455	460	465	455	470	465	470	470	455	480	452	468
				Reiced at Waynoka 10:30 A													
Emporia, Kas.		7:30A	60	420	425	430	440	440	430	455	445	435	455	440	450	425	445
Argentine	25	5 A	43	420	420	420	430	430	420	440	435	440	435	410	425	420	438
Shopton, Iowa		8:30P	54	400	410	415	420	420	410	430	420	425	430	400	435	408	425
Corwith, Ill.	26	8 A	56	385	390	395	405	405	395	415	405	410	410	375	415	390	410
"		5 P	70	395	400	400	410	405	395	405	410	415	415	450	405	398	410
Hammond, Ind.	27	10:30A	68	400	405	410	400	410	405	395	410	415	435	430	425	405	407
Marion, Ohio		9:30P	59	395	405	405	395	410	395	400	405	415	425	420	430	402	407
Salamanca, NY.	28	10:30A	67	390	400	400	390	405	395	400	400	405	415	400	420	397	402
Susquehanna, Pa.		9 P	50	400	410	410	390	410	395	405	405	415	420	420	435	407	408
Jersey City, NJ.	29	2 P	68	No reading recorded													
" "	30	12 M	73	430	425	435	405	415	410	410	415	420	445	510	480	430	415
New York, NY Oct.	1	12:30P	81	485	470	485	430	430	440	425	425	435	475	570	485	480	428

TABLE 8 - Car E

Lemons

TEMPERATURES IN TRANSIT

Preiced by Carrier. Replenished, Reiced once in transit, at Belen. Full bunker, Non-fan car

Place	Date Sept	Time	Out-side	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	TOP AIR	BOT AIR	AVE TOP	AVE BOT
San Bernardino	19	6 A	--	Preiced at San Bernardino by Carrier, 6-10A													
San Dimas	20	4:30P	86	608	598	602	588	588	577	548	542	597	637	742	417	603	562
San Bernardino	21	9:15A	78	598	593	607	568	543	547	478	467	552	592	582	407	599	499
				Replenished San Bernardino, 10 A													
Barstow		8:30P	75	585	580	585	550	520	530	450	440	465	575	590	405	583	452
Needles	22	4 A	63	570	570	575	540	500	515	430	425	450	565	560	395	572	435
Seligman, Ariz.		3 P	81	560	560	560	525	485	500	420	415	440	555	585	405	560	425
Winslow		10 P	56	550	550	555	515	470	490	410	410	435	545	560	400	552	418
Belen, NM	23	10 A	65	540	545	545	505	455	480	400	400	425	530	525	380	543	408
				Reiced Belen, 10:30A													
Clovis , NM.		9 P	61	530	530	530	490	445	465	390	395	415	525	540	395	530	400
Waynoka, Okla.	24	10 A	74	515	520	515	480	435	455	390	390	415	505	520	385	517	398
Emporia Kas.		7:30P	60	510	510	510	470	430	450	385	390	410	525	540	405	510	395
Argentine	25	5 A	43	500	505	505	460	420	440	380	385	405	505	485	380	503	390
Shopton Iowa		8:30 P	54	490	490	495	450	410	430	375	380	395	505	510	385	492	383
Corwith, Ill.	26	8 A	56	485	485	485	445	405	405	370	380	395	485	470	370	485	382
"		5 P	70	480	480	475	440	405	425	370	380	395	475	520	375	478	382
Hammond, Ind.	27	10:30A	68	470	470	465	435	400	420	370	380	395	480	490	385	468	382
Marion, Ohio		9:30P	59	470	465	460	430	400	420	375	385	395	510	505	400	465	385
Salamanca, NY.	28	10:30A	67	470	465	460	430	400	415	375	385	405	505	485	395	465	388
Susquehanna, Pa.		9 P	50	470	460	460	430	400	415	380	385	405	505	510	410	463	390
Jersey City, NJ	29	2 P	68	470	460	455	430	400	415	380	385	405	480	495	380	462	390
" "	30	12 M	73	470	455	455	430	405	415	380	385	405	470	515	395	460	390
" " Oct	1	11A	81	480	460	455	435	410	420	385	395	410	475	535	410	465	397
" "	2	11A	79	505	480	475	445	415	430	390	405	430	495	545	435	487	408
New York, NY	3	8 P	78	530	495	500	455	425	445	400	425	455	515	625	460	508	427

TABLE 9 - Car F

Lemons

TEMPERATURES IN TRANSIT

Half-stage. Preiced by carrier, Replenished. No reicing in transit. Non-fan car

Place	Date Sept	Time	Outside	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	TOP AIR	BOT AIR	AVE TOP	AVE BOT
San Bernardino	19	6 A	---	Preiced 6-10A													
Glendora	20	5:30P	87	581	593	586	588	571	573	528	537	530	577	621	445	587	532
San Bernardino	21	9:15A	78	552	562	565	552	538	554	474	479	494	550	539	439	560	482
				Replenished 10 A													
Barstow		8:30P	75	540	545	550	540	525	545	450	460	485	550	560	435	545	465
Needles	22	4 A	63	530	540	545	530	515	540	440	450	485	555	540	435	538	458
Seligman, Ariz		3 P	81	520	535	540	525	515	530	430	440	485	550	560	440	532	452
Winslow		10 P	56	515	545	535	520	510	525	420	440	490	555	540	435	532	450
Belen, NM	23	10 A	65	505	---	530	505	495	520	410	425	470	545	505	415	533	435
Clovis		9 P	61	500	530	520	485	495	525	410	425	490	545	540	425	517	442
Waynoka, Okla	24	10 A	74	490	530	515	495	490	525	410	425	495	545	530	430	512	443
Emporia, Kas		7:30P	60	490	555	515	495	490	525	410	425	495	565	555	445	520	443
Argentine	25	5 A	43	485	560	515	485	490	520	410	425	495	550	495	425	520	443
Shopton, Iowa		8:30P	54	485	540	505	470	485	520	410	420	465	550	530	435	510	432
Corwith, Ill	26	8 A	56	480	490	500	465	485	520	405	420	475	535	490	430	490	433
"		5 P	70	480	485	500	455	480	500	440	420	465	525	540	430	488	442
Hammond, Ind	27	10:30A	68	485	490	505	460	490	505	420	430	505	535	530	465	493	452
Marion, Ohio		9:30P	59	495	505	510	465	495	525	430	435	525	565	560	485	503	463
Salamanca, NY	28	10:30A	67	505	510	520	480	500	500	440	440	495	555	540	495	512	458
Susquehanna, Pa		9 P	50	525	525	535	490	515	500	450	450	505	565	580	500	528	468
Jersey City, NJ	29	2 P	68	530	535	545	505	525	---	470	465	520	555	560	500	537	485
" "	30	12 M	73	520	525	530	495	510	530	460	460	485	550	545	465	525	468
" " Oct.	1	11A	81	515	530	525	530	505	---	460	465	500	550	570	490	523	475
" "	2	11A	79	530	570	535	510	515	---	470	475	515	570	505	510	545	487

TABLE 10 - Car G

Lemons

TEMPERATURES IN TRANSIT

Half-stage. Preiced by Carrier, Replenished, Reiced once in transit, at Waynoka. Non-fan car.

Place	Date Sept	Time	Out-side	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	TOP AIR	BOT AIR	AVE TOP	AVE BOT
San Bernardino	19	6 A	--	Preiced by Carrier 6-10 A													
Lamanda Park	20	3:30P	88	558	617	573	541	551	565	510	537	571	591	645	438	583	539
San Bernardino	21	9:15A	78	544	564	553	506	519	533	453	478	498	538	549	424	554	476
				Replenished San Bernardino 10 A													
Barstow		8:30 P	75	535	555	545	495	500	520	430	455	480	535	565	450	545	455
Needles	22	4 A	63	525	600	535	480	480	510	420	445	470	530	540	530	553	445
Seligman, Ariz		3 P	81	520	595	530	475	480	500	415	440	465	540	565	425	538	440
Winslow		10 P	56	510	535	525	470	475	495	405	435	460	535	540	420	523	433
Belen, NM	23	10 A	65	500	520	515	455	460	490	395	425	450	525	505	405	512	423
Clovis		9 P	61	495	560	510	455	460	485	400	425	445	525	540	420	522	423
Waynoka. Okla	24	10 A	74	490	---	505	450	455	485	400	425	450	520	525	420	512	425
				Reiced, Waynoka 10:30 A													
Emporia, Kas		7:30P	60	485	500	500	445	445	480	390	415	445	525	530	415	495	417
Argentine	25	5 A	43	480	485	490	435	---	480	385	415	440	505	480	390	485	413
Shopton, Iowa		8:30P	54	470	480	485	425	425	470	385	405	425	500	500	400	478	405
Corwith, Ill	26	8 A	56	460	470	475	420	425	460	380	400	420	485	465	385	468	400
"		5 P	70	450	465	470	415	420	455	375	395	415	485	505	390	462	395
Hammond, Ind	27	10:30A	68	450	460	465	415	420	455	380	400	420	480	485	400	458	400
Marion, Ohio		9:30P	59	450	460	460	415	420	455	380	405	420	505	500	410	457	402
Salamance, NY	28	10:30A	67	445	455	460	410	420	450	385	405	425	495	480	405	453	405
Susquehanne, Pa		9 P	50	450	455	455	415	420	450	385	405	425	500	500	410	453	405
Jersey City, NJ	29	2 P	68	450	450	455	415	415	450	385	405	425	485	490	400	452	405
" "	30	12 M	73	450	460	455	415	420	450	385	410	425	485	505	415	455	407
" " Oct.	1	11A	81	460	465	455	520	420	445	395	415	435	525	525	430	460	415
" "	2	11A	79	485	495	475	435	430	465	405	425	450	555	545	460	485	427

TABLE 11 - Car H

Lemons

TEMPERATURES IN TRANSIT

Half-stage. Preiced by Carrier, Replenished, Reiced once in transit, at Needles. Non-fan car.

	Date Sept	Time	Out-side	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	TOP AIR	BOT AIR	AVE TOP	AVE BOT
San Bernardino	19		--	Preiced San Bernardino by Carrier, 6-10 A													
Lamanda Park	20	4 P	87	592	609	647	593	589	601	567	580	585	605	608	458	616	577
San Bernardino	21	9:15A	78	572	572	612	551	537	547	477	477	492	572	567	432	585	482
				Replenished San Bernardino 10-11 A													
Barstow		8:30P	75	555	560	585	535	520	525	445	450	475	565	595	435	567	457
Needles	22	4 A	63	545	545	570	520	505	515	430	440	475	560	600	435	553	448
				Reiced at Needles 5 A													
Seligman, Ariz		3 P	81	530	540	560	510	495	505	425	440	460	560	---	435	543	442
Winslow		10 P	56	530	535	560	505	490	500	420	435	460	560	575	435	542	438
Belen, NM	23	10 A	65	515	520	545	490	475	485	400	455	450	560	535	415	527	435
Clovis		9 P	61	505	515	540	480	465	480	400	440	440	540	620	425	520	427
Waynoka, Okla	24	10 A	74	500	505	535	480	460	480	400	420	445	530	530	430	513	422
Emporia, Kas		7:30P	60	495	500	535	475	455	470	400	430	440	570	555	440	510	423
Argentine	25	5 A	43	490	500	535	470	455	470	400	430	445	580	525	430	508	425
Shopton, Iowa		8:30P	54	480	490	525	465	450	460	400	430	440	525	530	430	498	423
Corwith, Ill	26	8 A	56	480	480	525	460	445	460	395	430	440	535	500	420	495	422
"		5 P	70	480	480	520	460	445	455	395	430	435	525	550	420	493	420
Hammond, Ind	27	10:30A	68	475	480	520	460	450	455	400	440	440	505	535	440	492	427
Marion, Ohio		9:30P	59	475	480	520	460	450	455	405	445	445	520	560	450	492	432
Salamanca, NY	28	10:30A	67	475	480	520	460	445	450	405	430	445	525	555	450	492	427
Susquehanna, Pa		9 P	50	480	480	525	460	450	455	410	430	450	---	630	460	495	430
Jersey City, NJ	29	2 P	68	480	480	525	465	455	460	415	460	455	530	---	450	495	443
" "	30	12 M	73	500	505	545	480	470	475	430	460	460	530	---	475	517	450
" " Oct.	1	11 A	81	535	545	585	510	490	500	450	465	475	550	620	500	555	463

TABLE 12 - Car I

Lemons

TEMPERATURES IN TRANSIT

Preiced by Carrier, Replenished, No reicing in transit. Fans on. Full bunkers

Place	Date Sept	Time	Out-side	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	TOP AIR	BOT AIR	AVE TOP	AVE BOT
San Bernardino	19		--	Preiced at San Bernardino 6-10A													
Placentia	20	11:30A	80	622	619	623	605	624	633	558	578	573	634	589	442	621	570
San Bernardino	21	9:15 A	78	562	564	583	540	564	578	433	478	508	609	544	447	570	473
				Replenished San Bernardino 10-11 A													
Barstow		8:30 A	75	520	510	545	520	540	550	435	480	500	590	485	485	525	472
Needles	22	4 A	63	480	460	485	490	505	515	450	480	490	545	435	475	475	473
Seligman, Ariz		3 P	81	450	435	460	465	475	490	455	470	480	530	450	470	448	468
Winslow		10 P	56	430	430	445	450	475	480	455	465	470	525	415	465	435	463
Belen, NM	23	10 A	65	400	400	415	420	445	445	435	440	450	480	370	435	405	442
Clovis		9 P	61	395	405	415	410	440	435	430	435	435	470	405	430	403	433
Waynoka, Okla	24	10 A	74	385	415	400	400	425	420	420	420	420	450	405	420	400	420
Emporia, Kas.		7:30P	60	380	390	400	395	425	415	415	415	410	450	415	420	390	413
Argentine	25	5 A	43	380	390	400	390	420	410	405	415	415	445	385	405	390	412
Shopton, Iowa		8:30P	54	385	385	400	390	415	405	400	405	410	440	395	410	390	405
Corwith, Ill	26	8 A	56	375	375	390	380	405	400	395	400	400	420	365	400	380	398
"		5 P	70	385	385	400	385	415	400	395	400	400	430	470	405	390	398
Hammond, Ind	27	10:30A	68	400	405	415	390	420	410	395	410	410	455	435	415	407	405
Marion, Ohio		9:30P	59	400	405	415	395	420	410	405	410	410	445	415	415	407	408
Salamanca, NY	28	10:30A	67	390	410	405	390	415	405	400	400	405	430	385	400	402	402
Susquehanna, Pa		9 P	50	400	420	415	400	420	410	405	405	410	440	415	415	412	407
Jersey City, NJ	29	2 P	68	400	425	415	400	415	410	405	410	410	435	445	410	413	408
" "	30	12 M	73	435	460	455	420	425	425	410	420	415	465	500	440	450	415
" " Oct	1	11 A	81	480	470	495	445	445	445	420	430	425	---	430	455	482	425
" "	2	11 A	79	525	525	540	490	470	485	450	445	440	550	560	475	530	445

TABLE 13 - Car J

Oranges

TEMPERATURES IN TRANSIT

Dry car loaded. Initially iced, reiced once in transit, at Belen. Full bunkers. Non-fan car

Place	Date Sept	Time	Out-side	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	TOP AIR	BOT AIR	AVE TOP	AVE BOT
Placentia, Calif	20	11:30A	80°	730	725	752	725	744	728	700	733	742	785	822	714	736	725
San Bernardino	21	9:15A	78	715	740	762	715	709	728	650	678	697	740	737	649	739	675
				Initially iced 10-11 A. San Bernardino													
Barstow		8 P	75	705	710	720	655	635	675	535	545	595	665	690	455	712	558
Needles	22	4 A	63	680	685	690	620	585	640	475	490	550	615	645	430	685	505
Seligman, Ariz		3 P	81	655	660	660	580	540	610	440	460	515	585	660	425	658	472
Winslow		10 P	56	640	645	645	570	525	590	420	445	495	565	630	420	643	453
Belen, NM	23	10 A	65	615	620	615	540	495	560	395	425	470	535	580	400	617	430
				Reiced 10:30 A. Belen													
Clovis		9 P	61	590	590	590	510	470	530	380	410	450	520	580	400	590	413
Waynoka, Okla	24	10 A	74	560	560	560	480	450	500	370	395	435	490	545	400	560	400
Emporia Kas		7:30P	60	545	545	540	470	435	490	360	390	425	490	555	400	543	392
Argentine	25	5 A	43	525	530	525	450	425	470	360	380	420	465	500	385	527	387
Shopton, Iowa		8:30P	54	505	510	505	435	410	450	345	375	410	460	510	385	507	377
Corwith, Ill	26	8 A	56	490	495	490	425	410	440	345	375	405	---	470	380	492	375
"		5 P	70	480	485	480	420	405	440	340	370	400	440	505	375	482	370
Hammond, Ind	27	10:30A	68	---	470	470	415	400	435	340	375	400	440	475	385	470	372
Marion, Ohio		9:30P	59	---	470	465	415	400	430	345	375	405	450	495	395	468	375
Salamanca, NY	28	10:30A	67	470	465	455	410	400	430	345	375	405	445	470	395	463	375
Susquehanna Pa		9 P	50	470	470	460	415	400	430	345	380	410	455	505	405	467	378
Jersey City NJ	29	2 P	68	470	460	450	415	400	430	350	385	410	440	485	380	460	382
" "	30	12 M	73	470	465	450	420	405	430	355	385	410	440	505	390	462	380
New York NY Oct	1	12:30P	81	485	475	465	430	410	440	360	390	415	455	545	420	475	388

TABLE 14 - Car K

Oranges

TEMPERATURES IN TRANSIT

Dry car loaded. Initially iced. Reiced once in transit, at Belen. Fans on. Full bunkers.

	Date Sept	Time	Out-side	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	TOP AIR	BOT AIR	AVE TOP	AVE BOT
Placentia, Calif	20	11:30A	80	698	708	740	736	720	750	691	739	752	787	829	667	715	727
San Bernardino	21	9:15A	78	718	738	735	711	750	745	676	714	707	757	744	652	730	699
				Initial icing 10-11 A, San Bernardino													
Barstow		8:30P	75	675	660	680	670	680	700	600	655	660	700	625	560	672	638
Needles	22	4 A	63	630	580	600	620	590	645	570	625	625	645	565	535	603	607
Seligman, Ariz		3 P	81	595	540	555	570	535	600	555	600	595	610	540	545	563	583
Winslow		10 P	56	560	515	530	535	505	570	540	575	575	580	510	535	535	563
Belen, NM	23	10 A	65	520	470	480	490	480	520	510	540	530	520	460	495	490	527
				Reiced 11 A, Belen													
Clovis		9 P	61	480	425	435	455	440	480	485	505	490	475	430	475	447	493
Waynoka, Okla	24	10 A	74	450	410	400	425	415	445	455	470	455	440	440	440	420	460
Emporia, Kas		7:30P	60	440	400	385	410	405	430	435	450	440	425	430	445	408	442
Argentine	25	5 A	43	420	400	385	395	400	420	420	435	430	415	410	410	402	428
Shopton, Iowa		8:30P	54	410	390	380	390	395	405	400	420	415	410	405	420	393	412
Corwith, Ill	26	8 A	56	410	380	365	385	385	395	395	405	400	395	385	395	385	400
"		5 P	70	395	390	375	385	385	395	390	400	400	410	475	400	387	397
Hammond, Ind	27	10:30A	68	---	400	385	390	395	400	385	410	405	430	445	415	392	400
Marion, Ohio		9:30P	59	---	395	375	390	390	400	390	405	400	415	425	415	385	398
Salamanca, NY	28	10:30A	67	385	380	370	385	385	390	390	400	390	395	395	395	378	393
Susquehanna, Pa		9 P	50	400	390	375	385	385	390	390	400	385	400	415	405	388	392
Jersey City, NJ	29	2 P	68	390	390	370	385	385	390	390	400	385	400	455	400	383	392
"	30	12 M	73	420	425	395	395	395	400	390	405	395	435	505	430	413	397
New York, NY Oct	1	12:30P	81	455	460	425	415	405	415	395	420	410	465	555	450	446	408

TABLE 15 - Car L

TEMPERATURES IN TRANSIT

Half-stage. Preiced by Carrier, Replenished, Reiced twice, at Belen and Marion. Non-fan car.

Place	Date Sept	Time	Out-side	TB CL	TQ CL	TD CL	MB R3	MQ R3	MQ R6	BB CL	BQ CL	BD CL	MD SS	TOP AIR	BOT AIR	AVE TOP	AVE BOT
San Bernardino	19		--	Preiced 6-10 A													
Corona	20	1:30P	96	560	569	577	560	549	564	520	511	529	559	620	437	569	520
San Bernardino	21	9:15A	78	515	554	552	550	509	519	440	446	469	529	550	447	540	452
				Replenished 10-11 A, San Bernardino													
Barstow		8:30P	75	495	545	542	540	490	510	420	425	455	525	560	435	527	433
Needles	22	4 A	63	490	535	535	530	485	495	405	420	455	525	545	435	520	427
Seligman, Ariz		3 P	81	480	530	530	520	475	490	405	420	450	530	575	445	513	425
Winslow		10 P	56	475	530	530	520	470	485	400	420	445	530	550	440	512	422
Belen, NM	23	10A	65	460	515	510	505	460	475	390	410	445	510	510	410	495	415
				Reiced at Belen, 10 A													
Clovis, NM		9 P	61	460	510	515	500	455	470	385	405	435	515	540	420	495	408
Waynoka, Okla	24	10 A	74	450	505	500	495	445	460	385	400	430	505	525	420	485	405
Emporia, Kas		7:30P	60	440	500	500	490	440	455	380	400	425	520	540	430	480	402
Argentine	25	5 A	43	435	490	490	480	430	450	380	400	425	495	485	415	472	402
Shopton, Iowa		8:30P	54	425	485	480	470	425	440	375	390	415	505	515	405	463	393
Corwith, Ill	26	8 A	56	420	470	475	465	425	440	375	385	415	485	480	390	455	392
"		5 P	70	420	470	475	465	420	440	370	390	410	485	525	400	455	390
Hammond, Ind	27	10:30A	68	420	470	470	465	420	435	380	395	420	485	505	410	453	398
Marion, Ohio		9:30P	59	420	475	470	470	420	435	385	400	425	510	515	415	455	403
				Reiced at Marion, 9:30 P													
Salamanca, NY	28	10:30A	67	410	460	460	455	415	430	370	390	415	495	485	400	443	392
Susquehanna, Pa		9 P	50	410	460	460	460	410	430	375	400	415	500	500	415	443	397
Jersey City, NJ	29	2 P	68	400	450	460	445	410	420	370	385	410	480	485	400	437	388
" "	30	12 M	73	400	450	450	440	410	420	370	390	410	470	495	410	433	390
" " Oct.	1	11 A	81	400	450	450	440	410	415	375	400	415	470	505	415	433	397
" "	2	11 A	79	405	455	455	460	415	420	385	405	430	480	510	435	438	407

Figure 1.

FRUIT TEMPERATURES

Ave. Top •——•——•
Ave. Bot. x——x——x

CAR A LEMONS (Sept. 1950)
FULL BUNKER NON-FAN CAR

PREICED, REPLENISHED,
DO NOT REICE

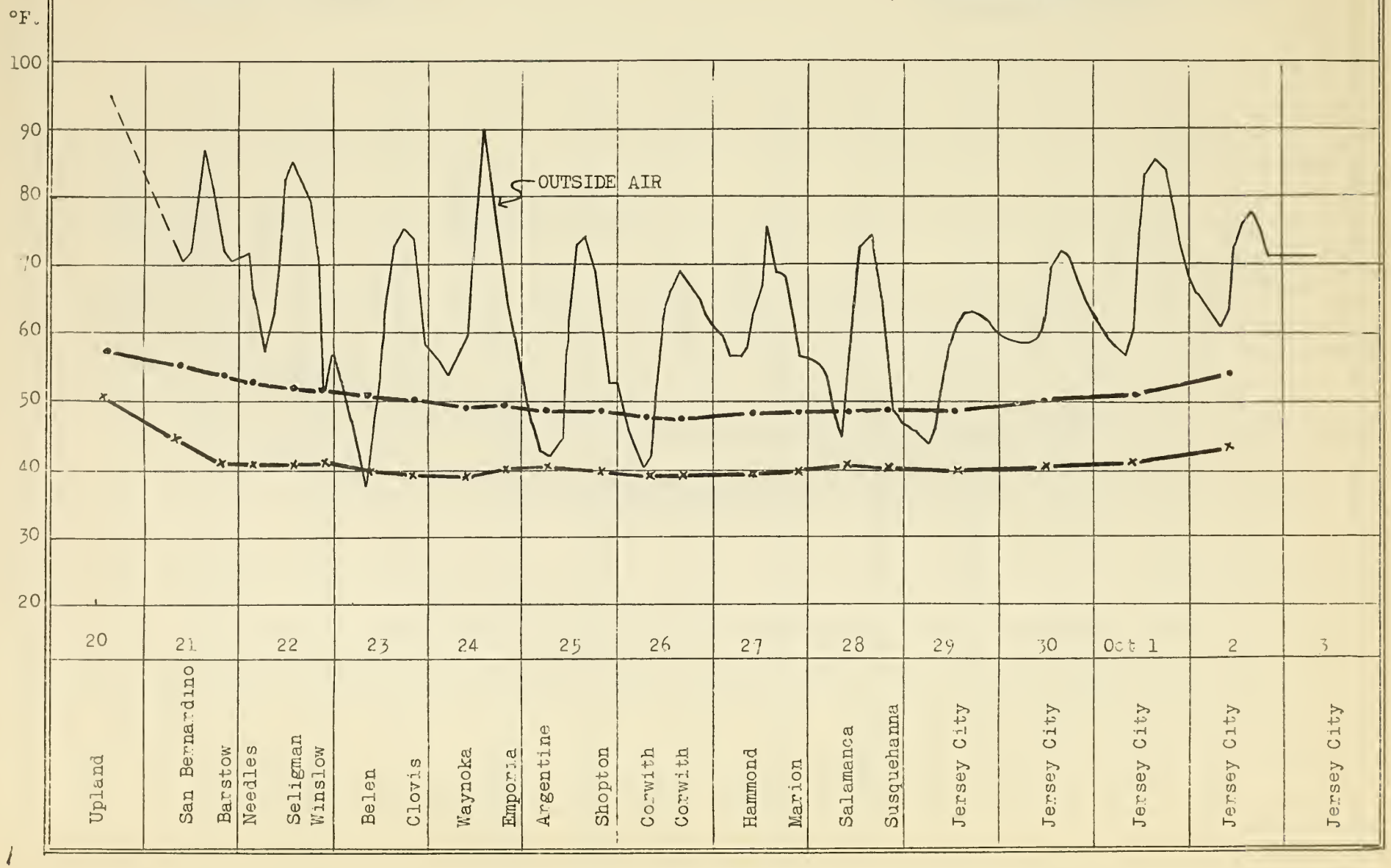


Figure 2

FRUIT TEMPERATURES

Ave. Top •—•—•
Ave. Bot. ×—×—×

CAR B LEMONS (Sept. 1950)
HALF-STAGE NON-FAN CAR

DRY CAR LOADED, INITIALLY ICED,
ONE REICING AT BELEN

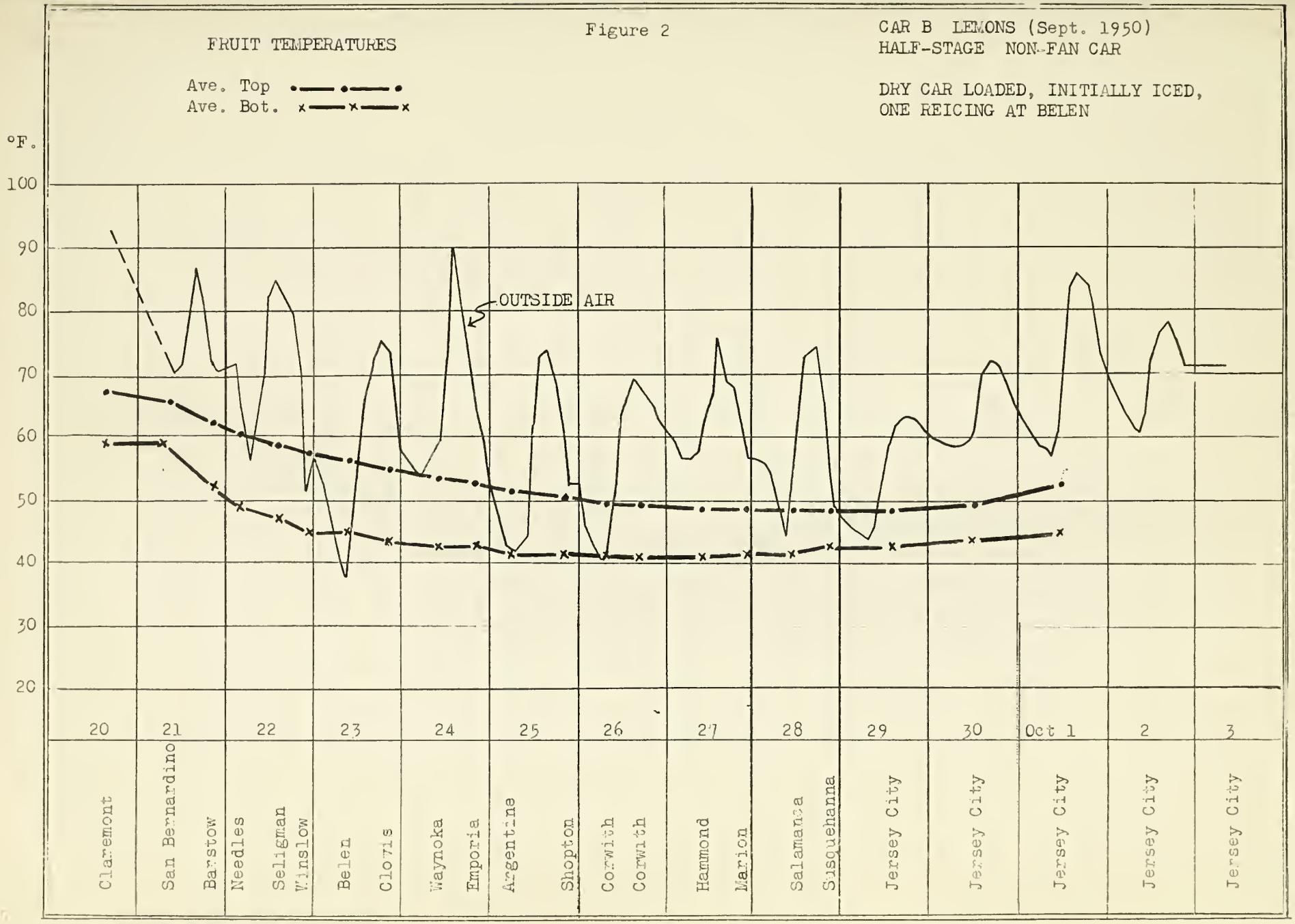


Figure 3

FRUIT TEMPERATURES

Ave. Top •—•—•
Ave. Bot. x—x—x

CAR C LEMONS (Sept. 1950)
HALF-STAGE FANS ON

DRY CAR LOADED, INITIALLY ICED,
ONE REICING AT BELEN

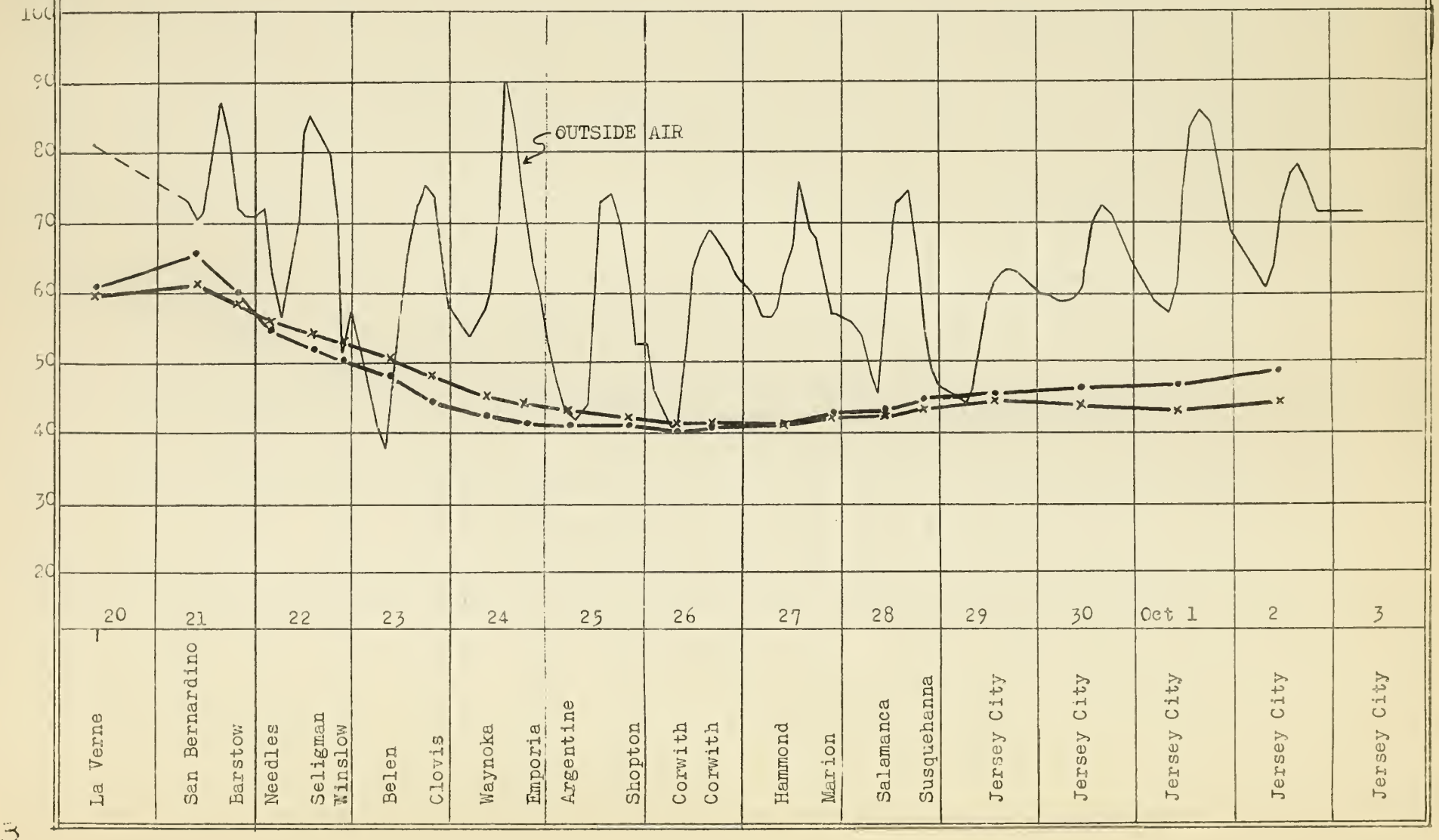


Figure 4

FRUIT TEMPERATURES

Ave. Top •—•—•
Ave. Bot. x—x—x

CAR D LEMONS (Sept. 1950)
HALF-STAGE FANS ON

PREICED, REPLENISHED, ONE
REICING AT WAYNOKA

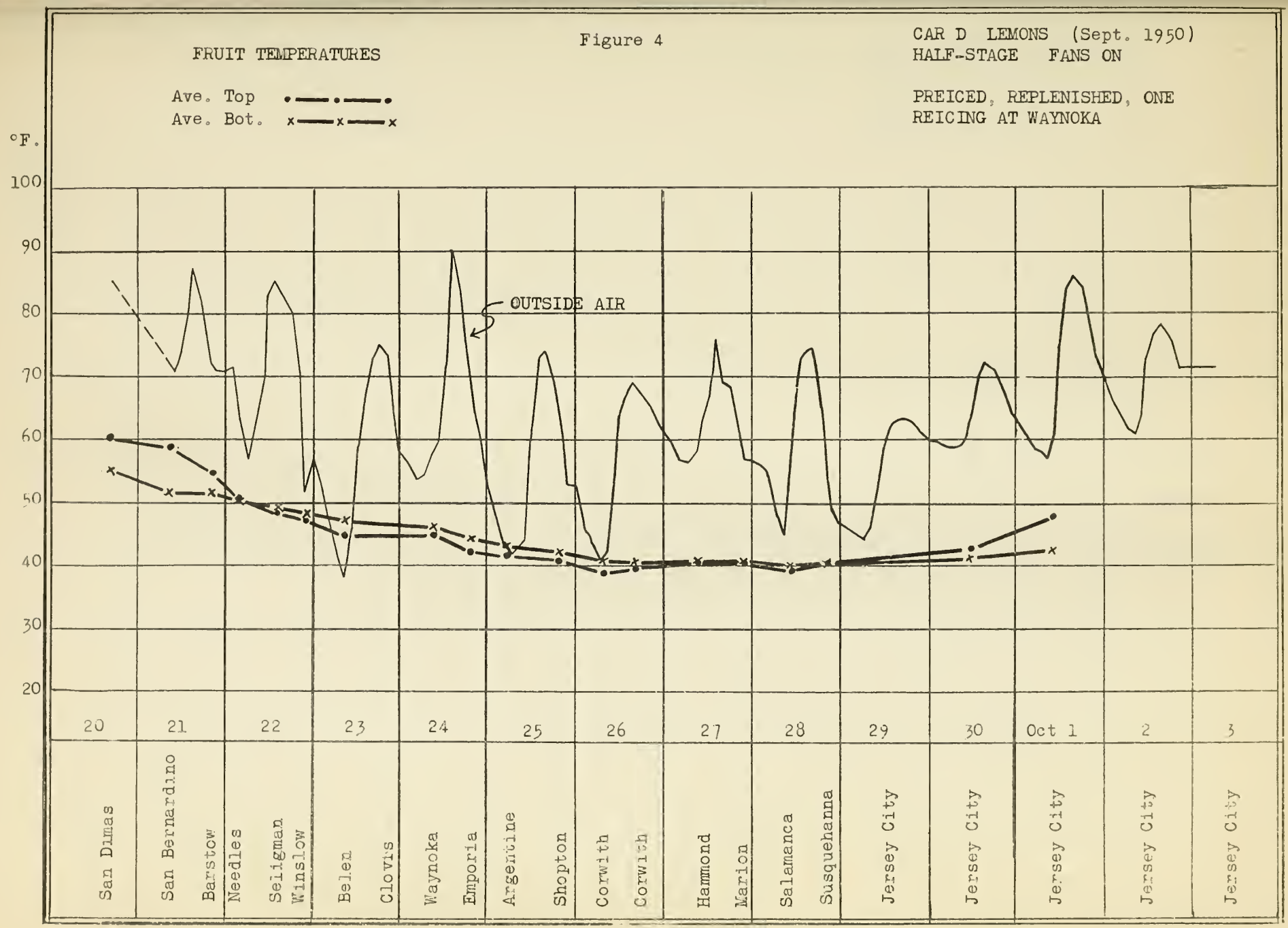


Figure 5

FRUIT TEMPERATURES

Ave. Top
Ave. Bot.

CAR E LEMONS (Sept. 1950)
FULL BUNKER NON-FAN CAR

PREICED, REPLENISHED, ONE
REICING AT BELEN

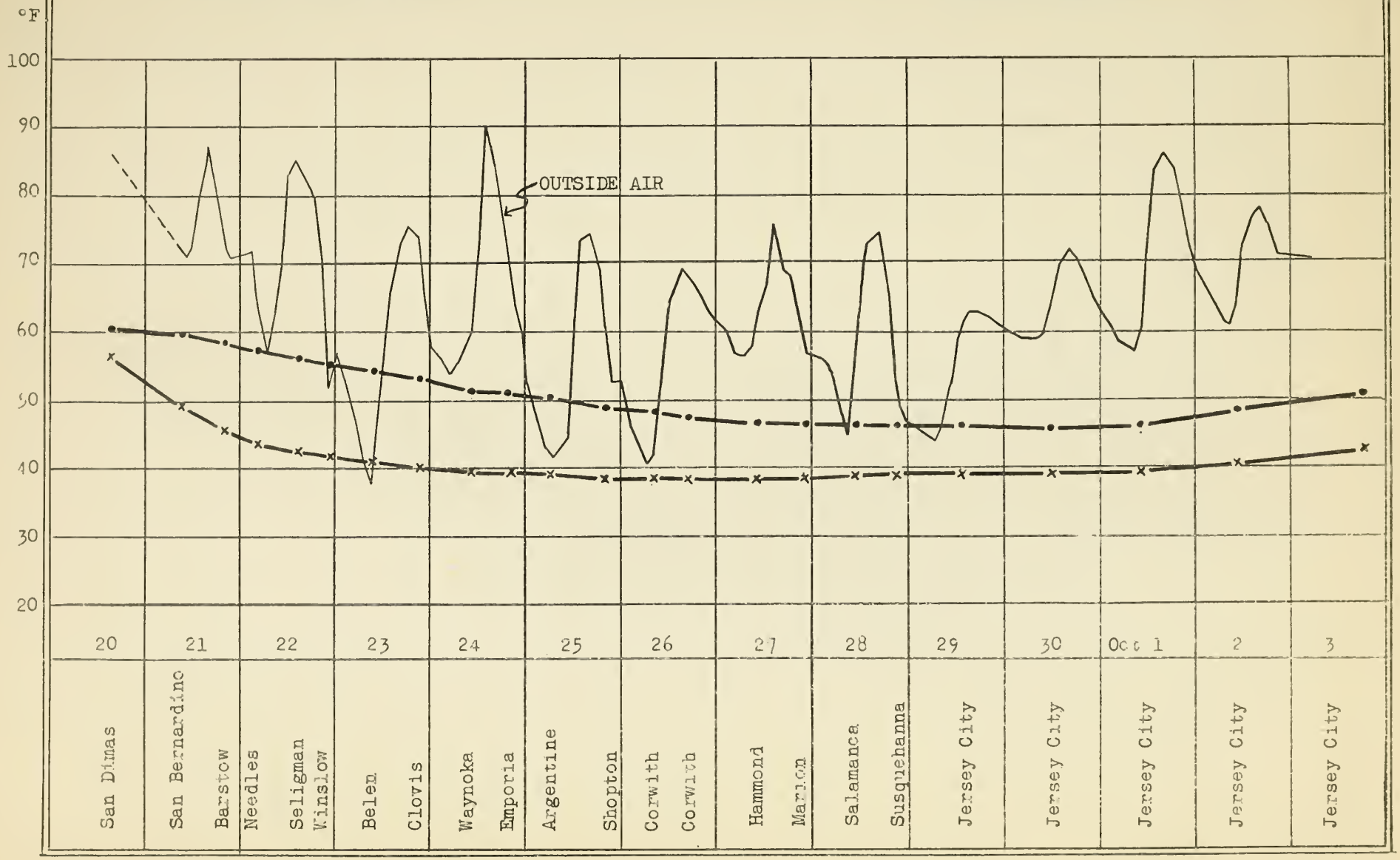


Figure 6

FRUIT TEMPERATURES

Ave. Top
Ave. Bot.

CAR F LEMONS (Sept. 1950)
HALF-STAGE NON-FAN CAR

PREICED, REPLENISHED,
DO NOT REICE

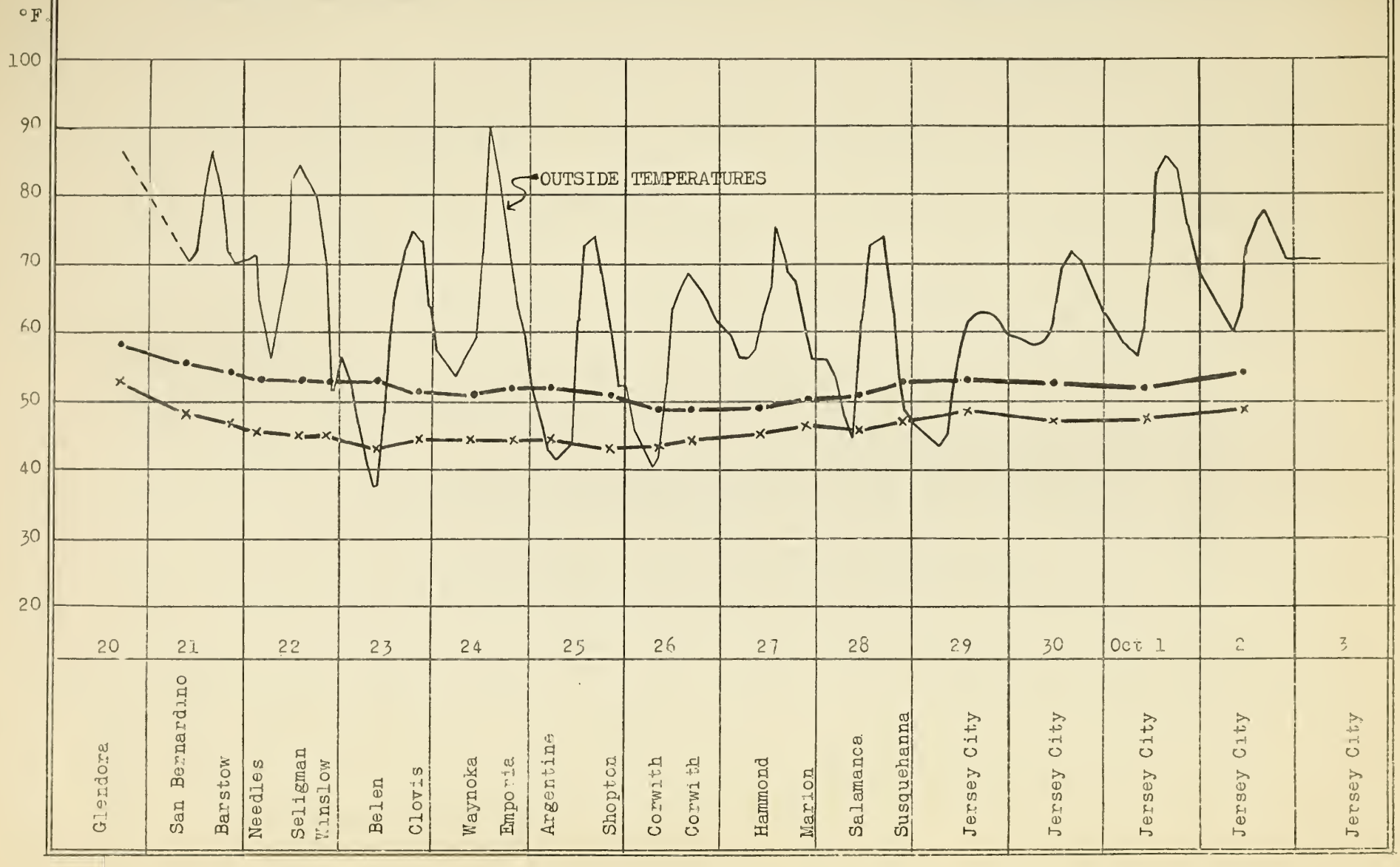


Figure 7

FRUIT TEMPERATURES

Ave. Top
Ave. Bot

CAR G LEMONS (Sept. 1950)
HALF-STAGE NON-FAN CAR

PRECOOLED REPLENISHED, ONE REICING, AT WAYNOKA

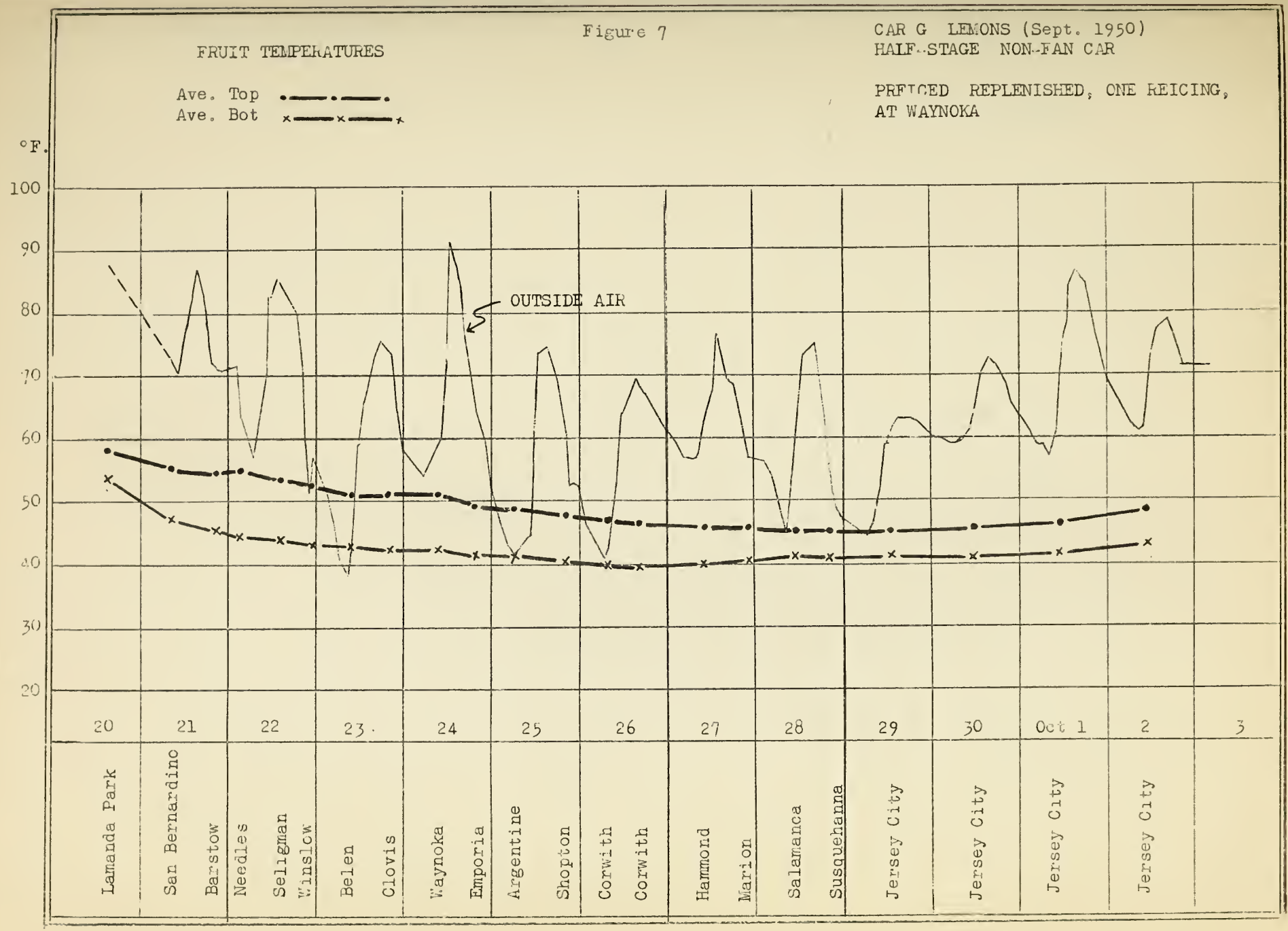


Figure 8

FRUIT TEMPERATURES

Ave. Top •—•—•
Ave. Bot. ×—×—×

CAR H LEMONS (Sept. 1950)
HALF-STAGE NON-FAN CAR

PREICED. REPLENISHED, ONE REICING, at NEEDLES.

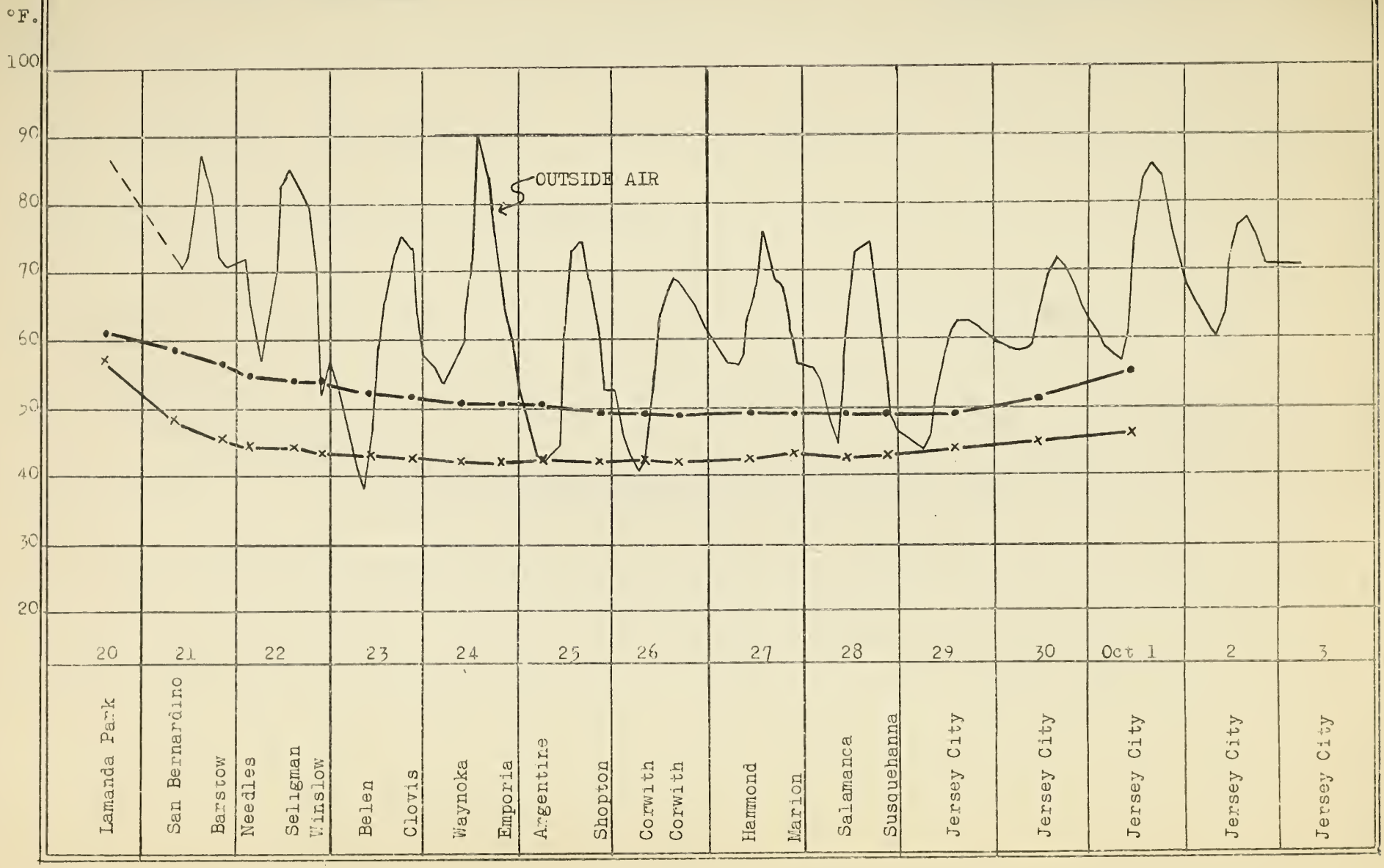


Figure 9

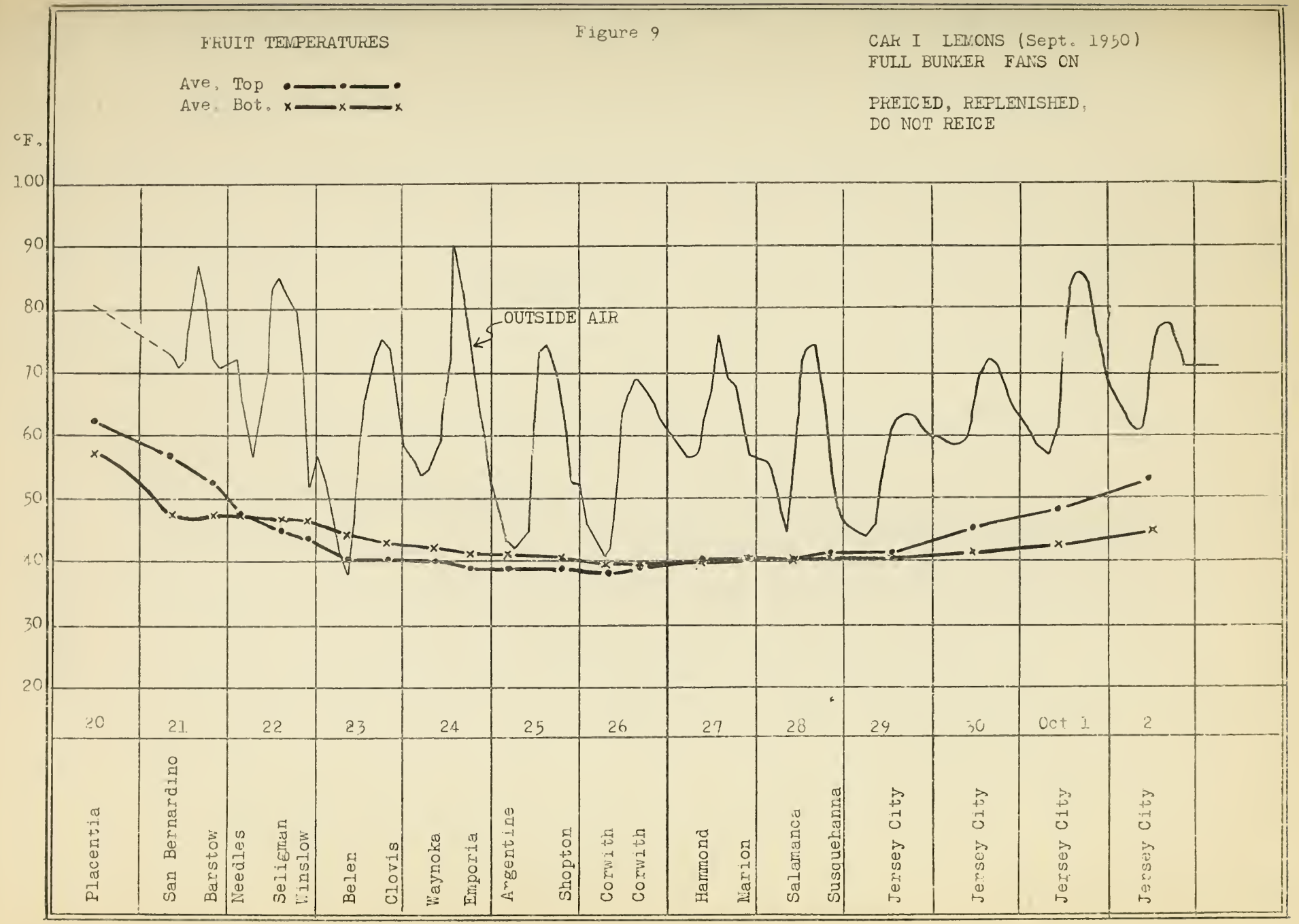

FRUIT TEMPERATURES
Ave. Top
Ave. Bot.
CAR I LEMONS (Sept. 1950)
FULL BUNKER FANS ON
PREICED, REPLENISHED,
DO NOT REICE
°F.
100
90
80
70
60
50
40
30
20
OUTSIDE AIR
20
21
22
23
24
25
26
27
28
29
30
Oct 1
2
Placentia
San Bernardino
Barstow
Needles
Seligman
Winslow
Belen
Clovis
Waynoka
Emporia
Argentine
Shopton
Corwith
Corwith
Hammond
Marion
Salamanca
Susquehanna
Jersey City
Jersey City
Jersey City
Jersey City

Figure 10

FRUIT TEMPERATURES

Ave. Top •—•—•
Ave. Bot. ×—×—×

CAR L LEMONS (Sept. 1950)
HALF-STAGE NON-FAN CAR

PREICED, REPLENISHED, 2 REICINGS
AT BELEN AND MARION

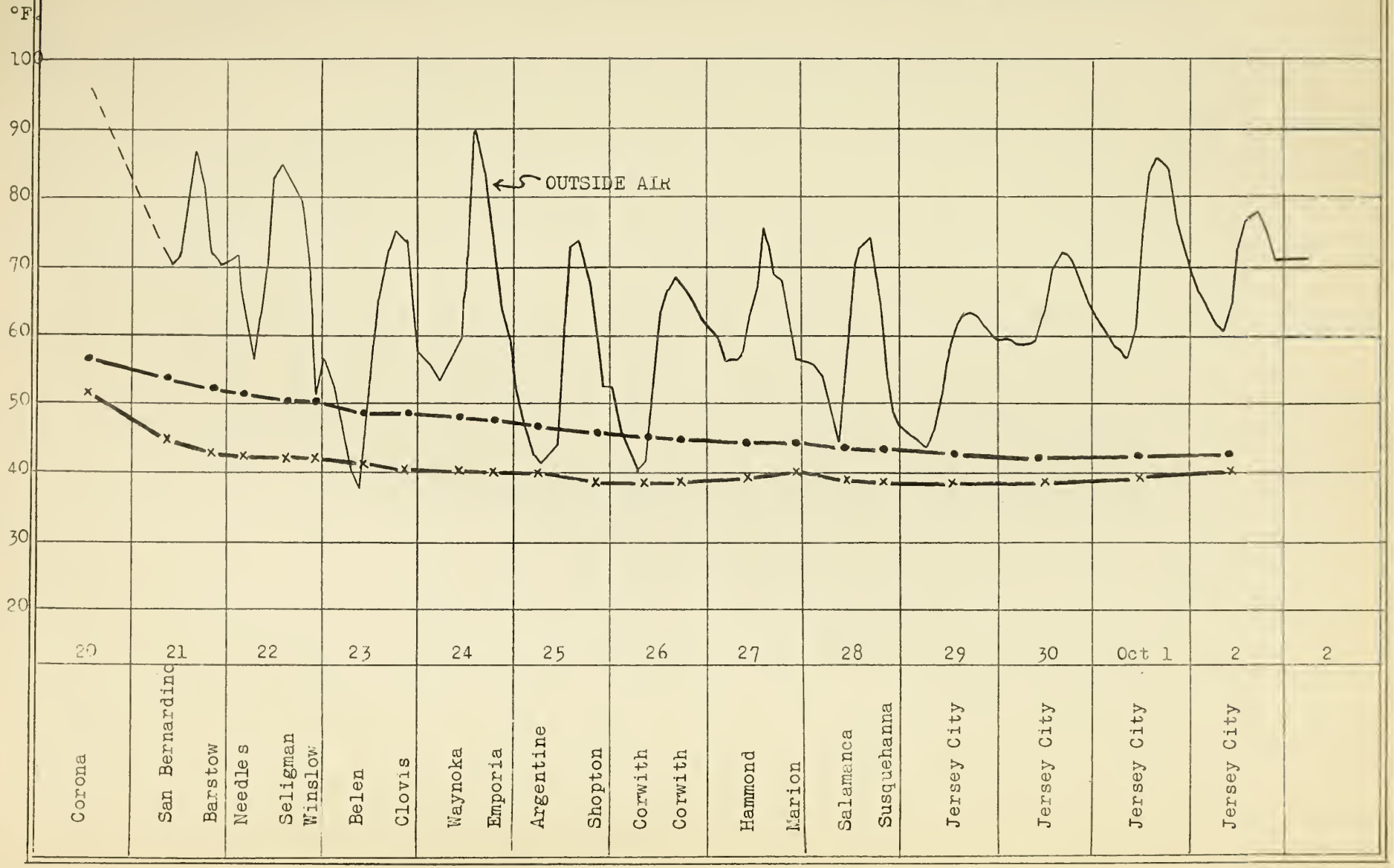


Figure 11

FRUIT TEMPERATURES

Ave. Top
Ave. Bot

CAR J ORANGES (Sept. 1950)
FULL BUNKER NON-FAN CAR

DRY CAR LOADED. INITIALLY ICED
ONE REICING AT BELEN

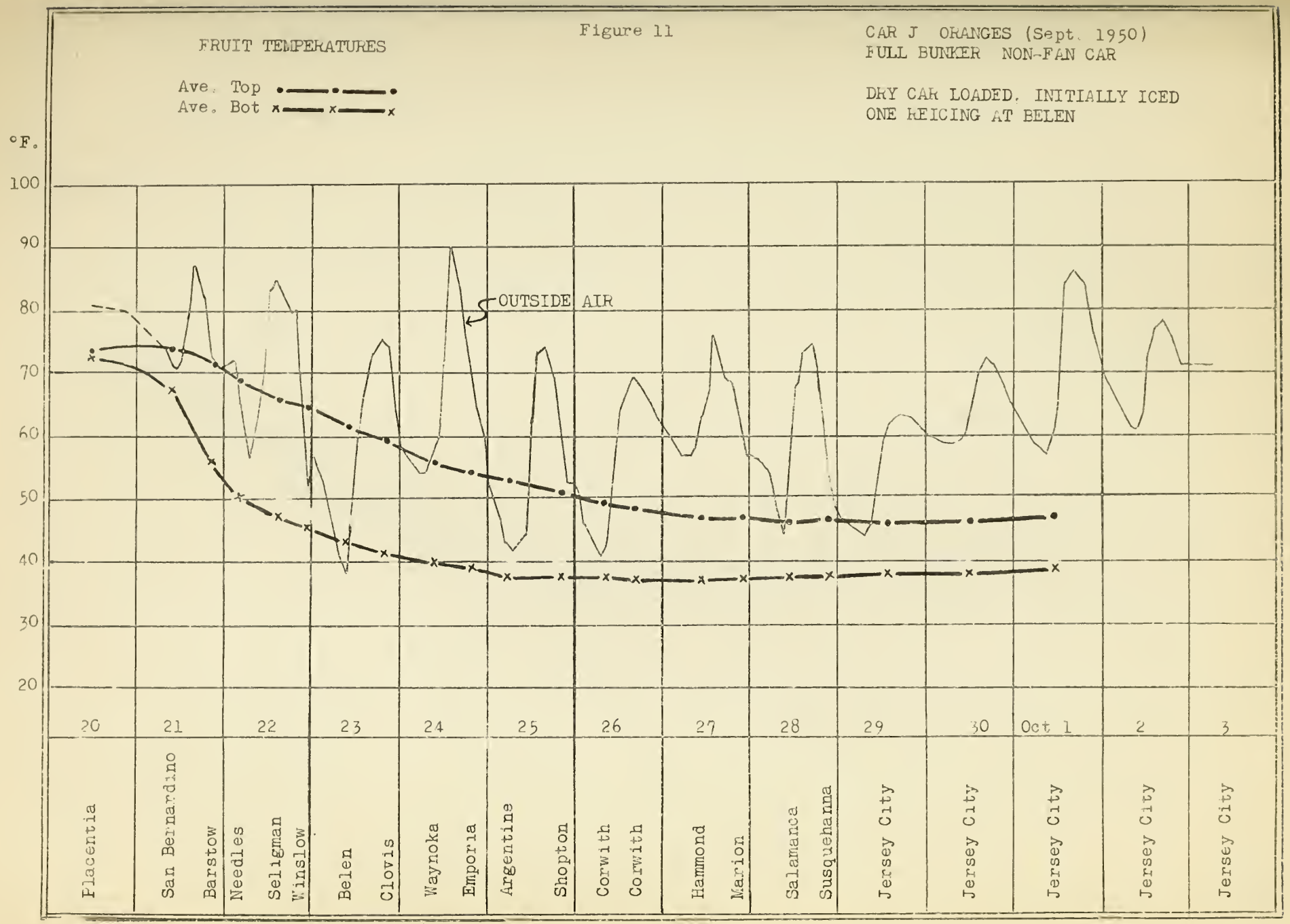
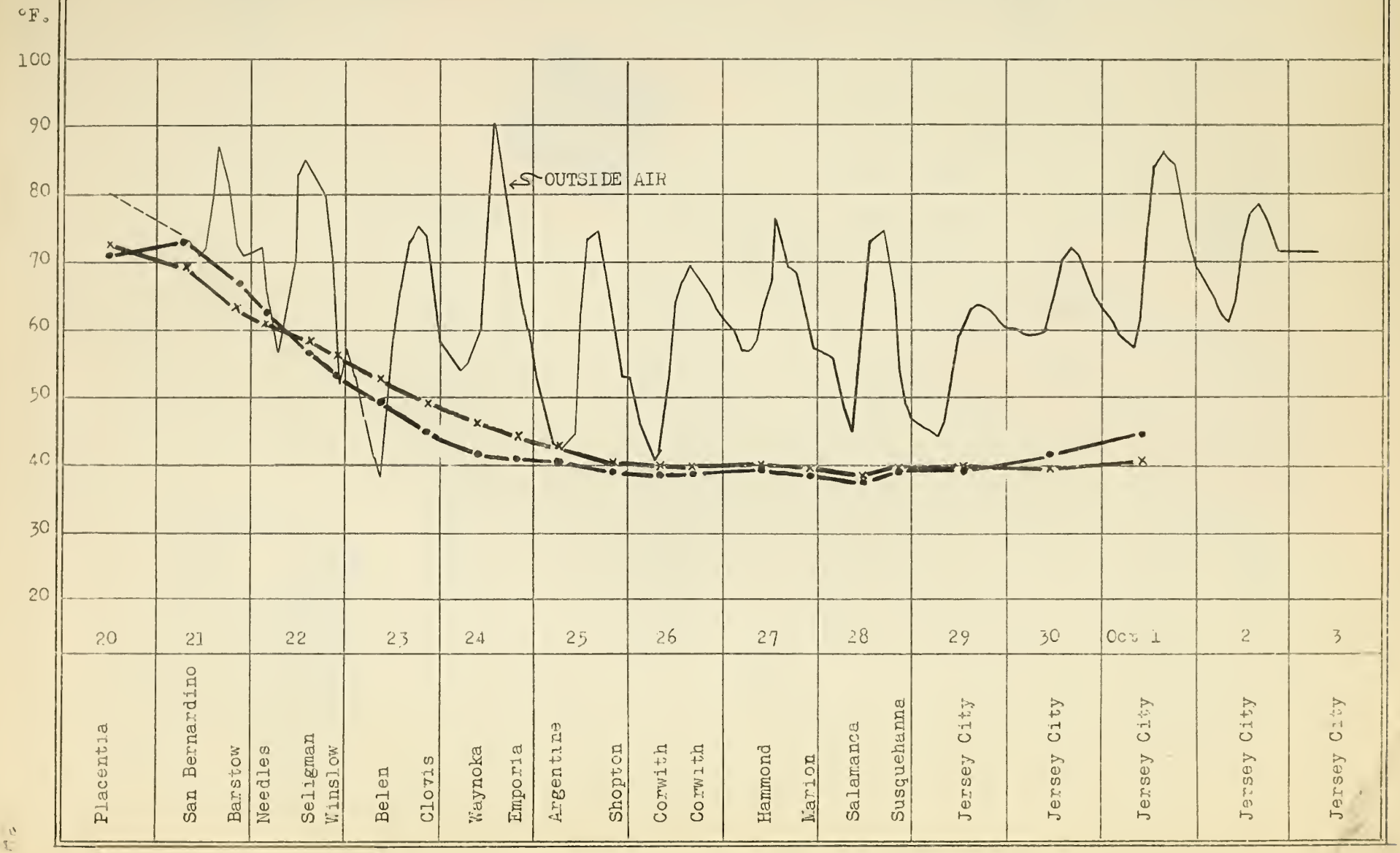


Figure 12

FRUIT TEMPERATURES

Ave. Top •—•—•
Ave. Bot ×—×—×

CAR K ORANGES (Sept 1950)
FULL BUNKER FANS ON

DRY CAR LOADED, INITIALLY ICED,
ONE REICING AT BELEN